POWDERED ICE MACHINE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an ice machine, and more particularly to an automatic powdered ice machine.

2. Description of Related Art

For producing ice food for sale, a conventional ice machine is provided with an ice pot. A refrigerating means is provided under the ice pot to cool the pot bottom to -10°C and below. Liquid or drink (such as milk, juice) is poured into the pot and frozen almost instantly. An ice-producer stirs the ice in the ice pot by means of a scoop, and the ice becomes powdered and as fine as snow flakes.

However, it is very inconvenient for the ice-producer to produce the powdered ice by continuously stirring. If there are lots of customers, he should stir the ice in the pot and scoop up the powdered ice at the same time and will feel embarrassed at keeping customers waiting. Moreover, if the ice-producer stops stirring the ice for a certain time, there will be ice lumps frozen on the pot, and it is very difficult to remove these thick ice lumps, in addition to the powdered ice having a coarse grain without a good taste. Therefore, in general, two staff members are required to produce good powdered ice in an appropriate time but this results in high labor cost in a business that is low profit. Furthermore, the ice pot has a large size, and can not be used conveniently in a house if a person wants to produce the ice at home.

Therefore, the invention provides an automatic powdered ice machine to

mitigate or obviate the aforementioned problems.

SUMMARY OF THE INVENTION

The main objective of the present invention is to provide an ice machine which is operated automatically to produce powdered ice and has a small size.

Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a powdered ice machine in accordance with the present invention;

Fig. 2 is an exploded perspective view of the powdered ice machine of Fig. 1;

Fig. 3 is a cross sectional view of the powdered ice machine;

Fig. 4 is an exploded perspective view of another embodiment of the powdered ice machine in accordance with the invention; and

Fig. 5 is a perspective view of the powdered ice machine of Fig. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to Figs. 1-3, a powdered ice machine in accordance with the present invention is installed on a bracket (1), and is composed of an ice barrel (10), two refrigerating devices (20) respectively mounted at two sides of the ice barrel (10), a milling device (30) partially extending in the ice barrel (10), and a feeding member (40) provided above the ice barrel (10) and beside the milling device (30).

The ice barrel (10) has a cylindrical chamber (11) defined therethrough.

A counterbore (12) is defined at a top side of the ice barrel (10). An ear (not numbered) is formed at an outer periphery of ice barrel (10) and an inlet (13) is defined in the ear and in communication with the counterbore (12) and the ice barrel (10).

The refrigerating devices (20) are respectively provided at two opposed sides of the ice barrel (10), and each have a semiconductor refrigerating component (21) with a cold surface abutting the outer periphery of the ice barrel (10). A heat sink (22) with multiple fins (not numbered) abuts a hot surface of the semiconductor refrigerating component (21), and a fan (23) is provided at a side of the heat sink (22) opposite to the semiconductor refrigerating component (21). The outer periphery between the two refrigerating devices (20) is covered with a layer of heat insulating material (14) to prevent the ice barrel (10) from exchanging heat with the external environment.

The milling device (30) has a milling pole (35) extending into the ice barrel (10) and driven by a motor (31) provided above the ice barrel (10). The motor (31) has an output axle extending downwards and a driving gear (32) mounted on the output axle. A clutching gear (33) is engaged with the driving gear (32), and a driven gear (34) is integrally formed on a top end of the pole (35) and is engaged with the clutching gear (33). A helical ridge (351), of which an outer diameter is slightly smaller than an inner diameter of the ice barrel (11) to define a clearance between the helical ridge (351) and an inner wall of the ice barrel (11), formed at an outer periphery of the milling pole (35).

The feeding member (40) has a funnel (41). A pipe (42) connected with the funnel (41) has an outlet (not numbered) in alignment with the inlet (13) of

the ear. A control valve (43) is provided between the funnel (41) and the pipe (42). A passage (431) is defined through the control valve (43) and in communication with the funnel (41) and the pipe (42). A knob (432) is mounted at an outer periphery of the control valve (43) and can be turned to control a flux through the passage (431) into the pipe (42) from the funnel (41). The control valve (43) is a conventional element, which should be known by those skilled in the art, so its structure will not be described in detail further.

In use, the semiconductor refrigerating components (21) are actuated to lower the temperature of the ice barrel (10) to -10°C and below by the cold surfaces. Heat from the hot surfaces can be discharged by the heat sinks (22) and the fans (23). Afterwards, the motor (31) is actuated to drive the milling pole (35) to turn, while liquid is poured into the funnel (41), and flows through the passage (431) of the control valve (43) and the pipe (42) and into the counterbore (12) via the inlet (13). Then, the liquid flows down along the inner wall of the ice barrel (10) and is frozen on the inner wall. The ice is removed from the inner wall and powdered by the helical ridge (351) of the milling pole (35), and pushed downwards to fall in a container (A) under the ice barrel (10). Because the helical ridge (351) is turned with a constant rotation speed and liquid is frozen at a constant rate, the ice powders have even grains. Moreover, by adjusting revolutions of the motor, the rotation speed of the helical ridge (351) can be changed. Thus, the ice powder produced under a low rotation speed of the helical ridge (351) is coarser than that produced under a high rotation speed.

Furthermore, the clutching gear (33) is movably engaged with the driving gear (32) and the driven gear (34). Therefore, when the clutching gear

(33) is disengaged from the driving gear (32) and the driven gear (34), the milling pole (35) is disabled from rotation even if the motor (31) is still operating.

With reference to Figs. 4 and 5, in another embodiment, the powdered ice machine includes only one refrigerating device (20) with a high power.

Therefore, by using the automatic powdered ice machine according to the present invention, it is very easy and convenient to produce powdered ice without manually stirring the ice, so a single staff member is able to simultaneously run the machine and serve customers. Moreover, the powdered ice machine has a small size so that can be used in a small workspace, such as a conventional domestic kitchen.

It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.